



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 10/761,418 Confirmation No. : 1427  
First Named Inventor : Hiroyuki HYAKUTAKE  
Filed : January 22, 2004  
TC/A.U. : 1774  
Examiner : J. M. Gray

Docket No. : 038788.53188US  
Customer No. : 23911

Title : Coated Glass Fibers for Reinforcing Rubber

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

**Mail Stop AF**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This is a pre-appeal brief request for review. The Final Action rejects claims 1-7 as anticipated by Akiyama (EP 0 937 740), and rejects claims 8-13 as obvious over Akiyama. As set forth below, these rejections are premised on clear legal and factual errors and should be withdrawn.

**Summary of the Invention**

The present invention relates to a coated glass fiber for reinforcing rubber. The coated glass fiber includes a glass fiber, a first coating layer covering the glass fiber, and a second coating layer covering the first coating layer. The second coating layer is defined by its process of preparation including (i) dispersing bisallylnadiimide, a rubber elastomer, a vulcanizing agent, and an inorganic filler in an organic solvent to prepare a second coating solution, (ii) applying the second coating solution to a first coating layer to form a second precursory layer, and (iii) drying the second precursory layer into the second coating layer. As a result of the presence of bisallylnadiimide in the dried second coating layer, the adhesion strength of the resulting coated glass fiber is substantially improved.

1. The Final Action erroneously fails to give weight to the product-by-process limitations of the claims.

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Claim 1 recites a coated glass fiber comprising, in pertinent part, a second coating layer covering a first coating layer, wherein the second coating layer is prepared by dispersing bisallylnadiimide and other ingredients in a solvent to prepare a second coating solution and applying and drying the second coating solution. The result of these process steps is a fiber coating containing the bisallylnadiimide.

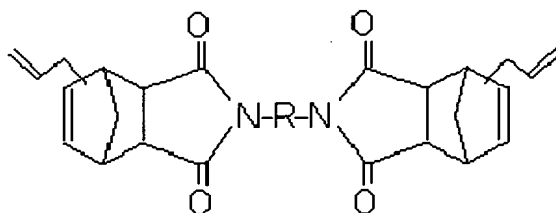
The Final Action states that “that no patentable weight is given to the process of making.” This is a clear error. As pointed out in M.P.E.P. §2113, in examining a product-by-process claim, weight must be given to the structure implied by the process steps, especially where the process steps would be expected to impart distinctive structural characteristics to the final product.

The process steps recited in claims 1-6 of dispersing bisallylnadiimide and other ingredients in a solvent to prepare a second coating solution, and applying and drying the second coating solution would necessarily and inherently impart a distinctive structural characteristic to the resulting coated fibers, namely the presence of bisallylnadiimide or a polymerization product thereof within the second layer. Further, the coating solution defined by claim 7 unquestionably contains bisallylnadiimide because its presence is positively recited in the claim.

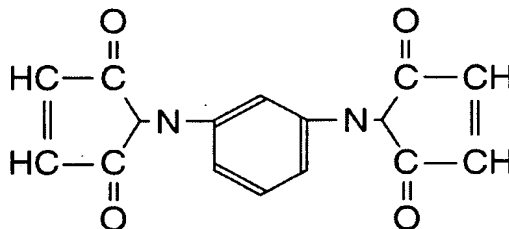
In contrast to the claimed invention, Akiyama does not describe a fiber coating or a coating solution containing bisallylnadiimide. Therefore, Akiyama cannot anticipate claims 1-7, and the rejection under §102(b) should be withdrawn.

2. The Final Action improperly concludes it would be obvious to substitute the claimed bisallylnadiimide compound for the chemically and structurally dissimilar maleimide compound taught by Akiyama.

Method claims 8-13 expressly recite the steps of dispersing bisallylnadiimide and other ingredients in a solvent to form a second coating solution and applying and drying the second coating solution. As acknowledged in the first Office Action, Akiyama does not teach the specific compound claimed by applicants, i.e., bisallylnadiimide, or a coating solution used to coat glass fibers comprising bisallylnadiimide. The statement of rejection in the first Office Action, incorporated by reference into the Final Action, nevertheless states that "the teachings of Akiyama would have rendered obvious the invention as claimed in claims 8-13." This is clear error. The claimed bisallylnadiimide corresponds to the following formula:



In contrast, Akiyama discloses fiber coatings and coating solutions comprising a maleimide corresponding to the formula:



It is evident that these compounds are chemically and structurally distinct. There is no evidence in the record that bisallylnadiimide is a known equivalent of Akiyama's maleimide or that these two distinct substances could or should be

substituted for each other. Thus, there is no suggestion or motivation in the record that would lead a person of ordinary skill in the art to replace the maleimide of Akiyama or to select the claimed bisallylnadiimide to do so.

Akiyama teaches that the maleimide is used as a vulcanization assistant (vulcanization accelerator) for forming the second coating layer. In contrast, the claimed bisallylnadiimide (see page 5, lines 12-20 of the specification) does not function as a vulcanization assistant but functions as an adhesive (bonding agent). Accordingly, Akiyama fails to make out a proper *prima facie* case of obviousness, and the rejection under §103 should be withdrawn.

3. The Final Action fails to consider the evidence of unexpected, superior results.

Even assuming *arguendo* that a *prima facie* case of obviousness had been made out, Applicants have demonstrated that glass fibers coated with the maleimide compound of Akiyama are inferior to glass fibers coated with bisallylnadiimide of the invention. As set forth in Table 1 on page 10 of the specification, a test comparing the use of bisallylnadiimide (Example 1) with the use of N,N'-(m-phenylene)dimalimide as taught by Akiyama (Comparative Example 3) shows that the bisallylnadiimide unexpectedly and surprisingly achieves much better adhesion strength than the maleimide. The use of bisallylnadiimide thus results in a substantial and material difference in the final product (i.e., the coated glass fiber), when compared with the maleimide of record. This comparative data from the specification must be considered and given weight. *In re Margolis*, 228 USPQ 940 (Fed. Cir. 1986). The improved results achieved by the use of bisallylnadiimide could not have been expected or predicted by a person of skill in the art. Thus, this evidence of unexpected, superior results effectively rebuts any *prima facie* case of obviousness. The failure to consider and give weight to this evidence of record also warrants withdrawal of the obviousness rejection.

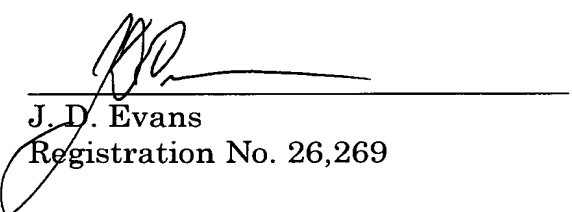
Conclusion

The cited reference fails to anticipate claims 1-7 and fails make out a proper *prima facie* case of obviousness with respect to claim 8-13. Akiyama discloses the use of maleimide, which is a completely dissimilar compound from the claimed bisallylnadiimide, to form a coating solution. Further, there is no motivation to modify the maleimide compound disclosed by Akiyama for a chemically and structurally distinct substitute. In view of the clear errors of law and fact made in the Final Action, Applicants respectfully request the Review Panel to withdraw the outstanding rejections and allow claims 1-13.

If there are any questions regarding this Request or the application in general, a telephone call to the undersigned at (202) 624-2845 would be appreciated since this should expedite the prosecution of the application for all concerned.

Respectfully submitted,

May 19, 2006



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